

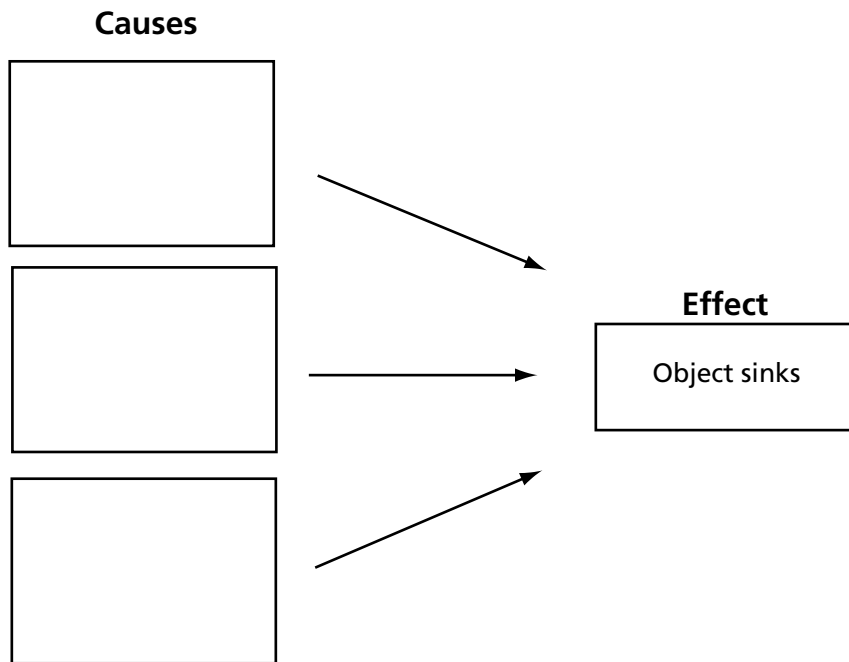
Forces in Fluids ▪ *Guided Reading and Study*

Floating and Sinking

This section describes a force that acts on objects under water. It also explains why some objects float and others sink.

Use Target Reading Skills

As you read the section, identify the reasons an object sinks. Write the reasons in the "causes" section of the graphic organizer. Look for answers in the text and the figure captions.



Buoyancy

1. Water exerts a(n) _____ force that acts on a submerged object.
2. Circle the letter of each sentence that is true about a buoyant force.
 - a. It acts against the force of gravity.
 - b. It acts in an upward direction.
 - c. It makes an object feel heavier.
 - d. It makes an object feel lighter.
3. How much fluid does a submerged object displace?

4. What does the Archimedes' principle state?

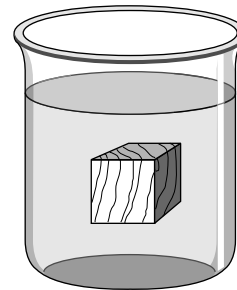
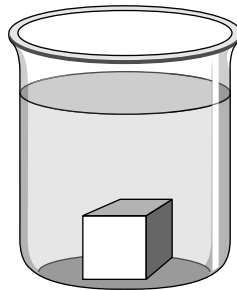
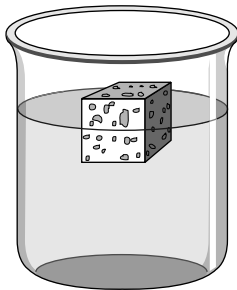
Forces in Fluids ▪ *Guided Reading and Study*

Floating and Sinking *(continued)*

5. Is the following sentence true or false? If the weight of a submerged object is less than the buoyant force, the object will sink.
- _____
6. What happens when the weight of a submerged object is exactly equal to the buoyant force?
- _____
- _____
- _____

Density

7. The _____ of a substance, no matter what state or shape, is its mass per unit volume.
8. What formula do you use to find density?
- _____
9. What is the density of water? _____



10. The illustrations above show three objects in water. All three objects are equal in volume. The captions for these illustrations are listed below. Write the letter of the correct caption under each illustration.
- a. Object is more dense than water.
 - b. Object is less dense than water.
 - c. Object has a density that is equal to water's density.
11. Is the following sentence true or false? An object that is more dense than the fluid in which it is immersed floats to the surface.
- _____

Forces in Fluids ▪ *Guided Reading and Study*

12. An object that is _____ dense than the fluid in which it is immersed sinks.
13. Why does a helium balloon rise in air while an ordinary balloon filled with air does not?

14. When a submarine pumps water out of its floatation tanks, its density decreases and it floats. Why does its density decrease?

15. Usually, the hull of a ship contains a large volume of air. Why?

16. The amount of fluid displaced by a submerged object depends on its _____.

Forces in Fluids ▪ *Review and Reinforce***Floating and Sinking****Understanding Main Ideas**

Answer the following questions in the spaces provided. Use the back of this sheet or a separate sheet of paper if you need more room.

1. Explain why an object underwater feels lighter than when it is in air.

2. If an object that floats on the surface displaces 10 cm^3 of water, how much does that object weigh? Explain how you know.

Fill in the table below.

| Observation of object in fluid | Density of object compared to the density of the fluid |
|----------------------------------|--|
| Object sinks. | 3. |
| Object floats on surface. | 4. |
| Object floats at constant level. | 5. |

Building Vocabulary

Define each of the following in the spaces provided.

6. Archimedes' principle

7. density

8. buoyant force
